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JEN CNC MULTI-AXIS CONTOURING SOFTWARE

Jen CNC is a full-featured 3D CNC software package designed exclusively to run Animatics SmartMotors.

Jen CNC combines features of both a CAD/CAM and a motion-control software package into a unique graphical user interface for controlling two to four SmartMotors in true 3D coordinated motion. With real time 2D and 3D plotting to the screen, DXF-to-G-Code conversion, and conversational G-Code building, your CNC machine will be up and running in no time. Jen CNC utilizes a simple serial interface to communicate and control SmartMotors. Using custom algorithms, motion is optimized for smooth control and continuous operation for all your machining needs. Due to it's ability to run in a constant vector velocity, regardless of changes in direction, the software is ideal where dispensing or flow rate of glue or adhesives is critical to the process.

Jen CNC is built on three years of in-field testing and customer feedback in real-world applications, including:

- Routers (gantry machining of aluminum, foam, vinyl, and wood)
- Hot-wire EPS foam cutting
- Plasma (oxy-fuel) cutting with torch height control
- Machining forms for vacuum-form molding of plastics
- Milling machine retrofits
- Sign making
- Engraving
- CNC drilling
- Gasket cutting
- Adhesive applicators

We strive to continuously improve its capabilities according to the needs and demands of our customers in order to provide the best possible solution for any need that may arise. Custom features can be added at a competitive rate. Please contact Animatics for more information.

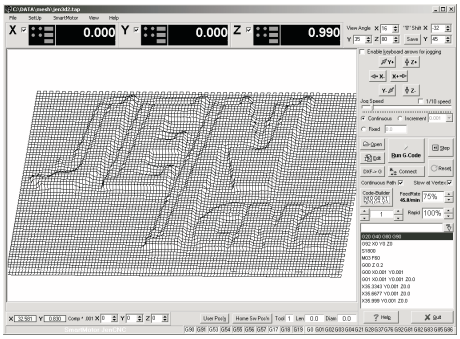
DXF to G-code converter:

Jen CNC's built-in DXF-to-G-Code converter allows you to open and view DXF files. Once in view, you can select entities in the order you wish to have the motors move. The converter includes a set-up for the Z-Axis. If you left click from one entity to the next, the Z-Axis motion G-Code is automatically generated.

All entities connected end-point to end-point will produce a continuous path until the need of the selection is reached. If the interpreter comes to a "Y" in the path, it will choose the path of least resistance (angular displacement).

There is an additional "Join" tolerance set-up. You can set the distance tolerance from one entity to the next in case the entities are not actually connected at their end-points.

If within that tolerance, the interpreter assumes connection and continues the path through the entities as one continuous motion. This can be very useful if the original DXF file was created freehand, as part of an artist rendering where O-Snaps may not have been used.



Jen CNC features

- Upon start-up, Jen CNC automatically detects motors and does a system update if any motor was changed out.

  This allows you to place the shortcut in the start-up directory to allow automatic restart on loss of power.
- A full machine settings window allows for customization to physical dimensions of the machining space.
- Machine tolerance levels can be set to ensure that no product damage occurs in the event of motor drop-out or path divergence.
- Slow-down proportional-to-angle can be tailored to minimize machining time while providing the best surface finish through sharp turns.
- Customizable G-Codes for user-defined tooling positions
- Customizable M-Codes for I/O control and SmartMotor commands or subroutine calls
- Ability to call G-Code subroutines
- Ability to repeat a section of G-code any number of times.
- Z-Axis (tool length) offsets
- SAE or metric scaling
- On-screen and keyboard real-time jogging.
- Auto-detection of Windows-compatible joystick for jog control
- Menu-selectable Inputs set-up window
- Wait-on-input definable M-Codes
- Customizable outputs assignable to user-definable M-Codes
- CMM probing for setting tool offset
- Terminal screen diagnostics page for testing and troubleshooting
- User-selectable homing routines with configurable offsets
- Advanced settings screen includes events set-up for E-Stop conditions

Jen CNC G-Codes Implementation

G-Codes not listed below are ignored by the interpreter.

Codes	Description	
G00	Rapid Move:	Initiates a rapid, uncoordinated move
G01	Linear Move:	Move in a straight linear coordinated line
G02	CW Arc:	Move along a clockwise circular arc
G03	CCW Arc:	Move along a counterclockwise circular arc
G04	Dwell:	Pauses Program “P” seconds
G10	Coordinate System Reset:	Resets the present coordinate system (G54-G57) to Zero
G12	Rewind rotary Axis:	Rewinds via the shortest path to Zero without multiple turns
G17	X-Y Plane Selection:	Selects the X-Y plane for circular motions
G18	Z-X Plane Selection:	Selects the Z-X plane for circular motions
G19	Y-Z Plane Selection:	Selects the Y-Z plane for circular motions
G20 and G70	Inch Mode:	Inch is the Default operating mode
G21 and G71	Metric mode:	Recalculation of G-Code
G28	Go to Tool change position:	Sends the 4 axes at rapid rate to a preset position
G37	Probing:	Customizable G-Code for Tool Offset Setting
G43	Tool Length Compensation:	Adjusts to the specified H value for Z axes
G56, and G57	Quadrant offsets:	Selects the quadrant you would like to work in
G76	Repeat a section of the program:	Repeats code “P” times back to “L” code label
G80	Clear any G8x modal mode:	Resets modal G8x command that is present
G90	Absolute:	Set to Absolute coordinates (Default)
G91	Relative:	Set to Relative coordinates.
G92	Set Coordinate System Offset:	Sets present coordinate system (G54-G57)
M00	Program End	Program ends, does not rewind
M01	Program Pause:	Program execution stops until "OK" button is pressed
M03, M04	User Defined:	Turns on the selected SmartMotor output (usually spindle ON)
M05	Turns M03 OFF:	Turns off the selected SmartMotor output (usually spindle OFF)
M06	Tool Change:	Stops the program execution and prompts the user to change the tool
M08	User Defined:	Turns on the selected SmartMotor output (usually coolant ON)
M09	Turns M08 OFF:	Turns off the selected SmartMotor output (usually coolant OFF)
M21	Continuous Path On:	Turns on the continuous path feature.
M210	Maximum Angle Amount:	Sets maximum angle where it will break the continuous path feature
M22	Continuous Path Off:	Turns off the continuous path feature
M23	Slow at Vertex On:	Turns on the slow at vertex feature
M24	Slow at Vertex Off:	Turns off the slow at vertex feature
M30 & M02	Program End and Reset:	Program execution halts and resets to the beginning
M50... M57	Waiting for Inputs:	Program pauses indefinitely waiting on an external input to be True
M60... M79	Outputs to the real world:	Turns on/off the user-selected SmartMotor outputs
M80... M91	Advanced functions:	Issues user-defined SmartMotor commands directly to the SmartMotor
M95	Haas Dwell:	(exactly the same as G04)
M98	Go To a subroutine:	Calls G-Code Subroutines (“O”xxx)
M99	Return from a subroutine:	M99 (returns the interpreter to the next line below the M98 that called it)